

will be soon necessary to apply their knowledge in the search for coal in the old ridge of crumpled palæozoic rocks beneath its northern border.

The West of England has received a few touches here and there ; but the outcrops of the Cretaceous and Upper Oolite beds through Berks, Bucks, and Cambridgeshire have been carefully revised ; and so have the Oolites of Northamptonshire and Oxfordshire. Still more important is the improved work in the Warwickshire and Leicestershire Coal-fields, and in Charnwood Forest, with its Cambrian (if not older) rocks. The North-Staffordshire and Lancashire Coal-fields become, as it were, remodelled by the now accurate outlines of their areas ; and the neighbourhood of Manchester, in particular, passes from an artificial to a natural appearance, geologically viewed. The great Permian range, from Durham southward, is taking its natural form on paper ; for the Survey has reached northwards much beyond Doncaster. The red sandstones of the Eden and of the west coast of Cumberland now appear in their true Permian colours ; and various spots in Northumbria also speak of the researches of several active geologists of to-day. Lastly, in Wales a few modifications of outlines in the Old Red and the complicated patches of igneous rocks may be noticed. The illustrated sections are repeated (with stronger lettering) on the margins, as heretofore.

In this new map there are additions to the railways, bolder distinctive numbers to the different formations, and modifications in some of the tints ; and an important mass of information is added in notes and remarks all around the coast.

The general result is that we have a very useful and handsome Geological Map of England and Wales (12 miles to the inch), not so large as the "Greenough Map" published by the Geological Society of London, but constructed on the same basis, and containing a very large amount of useful information, clearly put by the master-hand of an accomplished geologist, and produced in good style by an intelligent publisher.

PROCEEDINGS OF LEARNED SOCIETIES.

ROYAL SOCIETY.

April 26, 1866.—J. P. Gassiot, Vice-President, in the Chair.

"On the Dentition of *Rhinoceros leptorhinus* (Owen)." By W. Boyd Dawkins, M.A., Oxon., F.G.S.

The fossil remains of the genus *Rhinoceros* found in Pleistocene deposits in Great Britain indicate four well-defined species. Of these the *R. tichorhinus*, or the common fossil species, ranged throughout France, Germany, and Northern Russia, and, like its congener the Mammoth, was defended from the intense winter cold by a thick clothing of hair and wool. Its southern limit in the Europæo-Asiatic continent was a line passing through the Pyrenees, the Alps, the northern shore of the Caspian, and the Altai Mountains.

It has not yet been proved to have existed in Europe anterior to the deposit of the Boulder Clay. The second species, the *R. megarhinus* of M. de Christol, characterized by its slender limbs and the absence of the "cloison," has been determined by the author among remains from the brick-earths occupying the lower part of the Thames valley, and from the Preglacial forest-bed of Cromer. The species ranged from the Norfolk shore southwards through Central France into Italy. In France and Italy it characterizes the Pliocene deposits, being found in the former country in association with *Mastodon brevirostris* and *Halitherium Serresii*, in the latter with *M. Arvernensis*. From its southern range we may infer that the megarhine species was fitted to inhabit the warm and temperate zones of Europe, just as the tichorhine was peculiarly fitted for the endurance of an Arctic winter.

The third species is the *R. etruscus* of Dr. Falconer, confined to the forest-bed of the Norfolk shore, and, like the *R. megarhinus*, found in the Pliocenes of France and Italy; it ranged across the Pyrenees as far as Malaga, and is the only species known to occur in Spain.

The fourth, the *R. leptorhinus* of Professor Owen, is the equivalent of the *R. hemitæchus* of Dr. Falconer. It is defined as "*R. à narines demicloisonnées*," and is probably not the same animal as the *R. leptorhinus* or "*R. à narines non-cloisonnées*" of Baron Cuvier, the evidence as to the absence or presence of the cloison in the type of the species being of the most conflicting nature. In Central France it is identical with *R. mesotropus* and *R. velaunus* of M. Aymard, the *R. Aymardi* of M. Pomel, and the *R. leptorhinus* (du Puy) of M. Gervais. Its dentition is characterized by the presence of the *third costa* in the upper molar series, coupled with the stoutness of the cingulum, the suppression of the *anterior combing plate*, the smoothness of the enamel, and the extent to which the upper molars overhang the lower, which causes the enamel on the outer side of the latter to be worn obliquely. The lower molars can be determined by the flattening of the *anterior area*, coupled with the fine sculpturing of the enamel-surface. In common with the other fossil British Rhinoceroses, it possessed a molar series of six only on either side, and was bicorn. It ranged through England, from the Hyæna-den of Kirkdale in Yorkshire in the north, as far south as the plains of Somersetshire, and as far to the West as Pembroke-shire. It is very generally found in association with *Elephas antiquus* and *Hippopotamus major*, both species which lived in Pliocene times. The association in Wookey Hole Hyæna-den with *Elephas primigenius* and *R. tichorhinus* and other characteristic Postglacial mammals proves that it coexisted with the tichorhine species, to which it probably bore the same geographical relation as the Elk does to the Reindeer in the high northern latitudes. The sum of the evidence proves that it was coeval with the Mammoth and tichorhine Rhinoceros, and does not characterize deposits of an earlier epoch in the Pleistocene. It has not as yet been found in Preglacial formations. The *R. leptorhinus* is more closely allied to the bicorn Rhinoceros of Sumatra than to any other living species.